

AMENDMENTS TO THE CLAIMS

This Listing of the Claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Canceled)
2. (Currently amended) The method of claim [1]9, wherein an ammonium salt is provided to the solution by an ammonium-containing compound selected from the group consisting of ammonium sulfate, ammonium iodide, ammonium bromide, ammonium chloride, ammonium fluoride, ammonium acetate, ammonium carbonate, ammonium chromate, ammonium nitrate, ammonium oxalate, ammonium phosphate, and mixtures and combinations thereof.
3. (Currently amended) The method of claim [1]9, wherein the concentration of the ammonium salt is approximately 0.01 gram-moles per liter to approximately 2 gram-moles per liter of the solution.
4. (Currently amended) The method of claim [1]9, wherein the halogen salt is provided to the solution by a halogen containing compound selected from the group consisting of hydrogen chloride, hydrogen bromide, hydrogen iodide, hydrogen fluoride, sodium chloride, sodium bromide, sodium iodide, sodium fluoride, potassium chloride, potassium bromide, potassium iodide, potassium fluoride, ammonium chloride, ammonium bromide, ammonium iodide, ammonium fluoride, and mixtures and combinations thereof.
5. (Currently amended) The method of claim [1]9, wherein the concentration of the halogen salt is approximately 0.01 gram-moles per liter of solution to approximately 2 gram-moles per liter.
6. (Currently amended) The method of claim [1]9, wherein the ammonium salt is provided to the solution by an ammonium containing compound selected from the group consisting of ammonium iodide, ammonium bromide, ammonium chloride, ammonium fluoride, ammonium

acetate, ammonium carbonate, ammonium chromate, ammonium nitrate, ammonium oxalate, ammonium phosphate, and mixtures and combinations thereof, and the halogen salt is provided to the solution by a halogen containing compound selected from the group consisting of ammonium iodide, ammonium bromide, ammonium chloride, ammonium fluoride, and mixtures and combinations thereof.

7. (Canceled).

8. (Currently amended) The method of claim [1]9, wherein the oxidant is selected from the group consisting of nitrogen oxides, nitrosyl chloride, chlorine, bromine, iodine, fluorine, and ozone and hypochlorite.

9. (Currently amended) ~~The method of Claim 1,~~ A method of recovering a precious metal from a source material, comprising the steps of:

a) contacting a source material comprising at least one precious metal with a solution comprising an ammonium salt, a halogen salt and an oxidant, wherein the oxidant is gaseous and is provided to the solution by the introduction of at least a first liquid reagent and at least a second liquid reagent; and

b) recovering at least a portion of the at least one precious metal from the solution.

10. (Original) The method of Claim 9, wherein the first liquid reagent is selected from the group consisting of hypochloric acid, sodium hypochlorite, potassium hypochlorite, ammonium hypochlorite, alcohol, and mixtures and combinations thereof, and the second liquid reagent is selected from the group consisting of nitric acid, sodium nitrate, potassium nitrate, ammonium nitrate, and mixtures and combinations thereof.

11. (Currently amended) The method of Claim [1]9, wherein the ~~reaction zone is~~ contacting step is performed at approximately ambient pressure.

12. (Currently amended) The method of claim [1]9, further comprising the step of heating the solution to a temperature less than approximately 150 degrees Celsius.

13. (Currently amended) The method of claim [1]~~12~~, ~~further comprising heating the solution to a~~ wherein the temperature is in the range of approximately 50 degrees Celsius to approximately 100 degrees Celsius.

14. (Currently amended) The method of claim [1]~~9~~, wherein the pH of the solution is less than approximately 10.

15. (Currently amended) The method of claim [1]~~9~~, wherein the pH of the solution is approximately 0.5 to approximately 8.

16. (Currently amended) The method of claim [1]~~9~~, wherein the solution further comprises an acid.

17. (Currently amended) The method of claim [1]~~9~~, wherein the at least one precious metal is selected from the group consisting of platinum, iridium, osmium, palladium, rhodium, ruthenium, gold, and rhenium.

18. (Canceled).

19. (Currently amended) The method of claim [18]~~25~~, wherein the at least one ammonium salt is provided to the solution by an ammonium-containing compound selected from the group consisting of ammonium sulfate, ammonium iodide, ammonium bromide, ammonium chloride, ammonium fluoride, and mixtures and combinations thereof.

20. (Currently amended) The method of claim [18]~~25~~, wherein the concentration of the ammonium salt is approximately 0.001 gram-moles per liter to approximately 2 gram-moles per liter of the solution.

21. (Currently amended) The method of claim [18]~~25~~, wherein the halogen salt is provided to the solution by a halogen containing compound selected from the group consisting of hydrogen chloride, hydrogen bromide hydrogen iodide, hydrogen fluoride, sodium chloride, sodium bromide, sodium iodide, sodium fluoride, potassium chloride, potassium bromide, potassium iodide, potassium fluoride, ammonium chloride, ammonium bromide, ammonium iodide, ammonium

fluoride, and mixtures and combinations thereof.

22. (Currently amended) The method of claim [18]25, wherein the concentration of the halogen salt is approximately 0.01 gram-moles per liter of solution to approximately 2 gram-moles per liter.

23. (Currently amended) The method of claim [18]25, wherein the ammonium salt is provided to the solution by an ammonium containing compound selected from the group consisting of ammonium iodide, ammonium bromide, ammonium chloride, ammonium fluoride, ammonium acetate, ammonium carbonate, ammonium chromate, ammonium nitrate, ammonium oxalate, ammonium phosphate, and mixtures and combinations thereof, and the halogen salt is provided to the solution by a halogen containing compound selected from the group consisting of ammonium iodide, ammonium bromide, ammonium chloride, ammonium fluoride, and mixtures and combinations thereof.

24. (Currently amended) The method of claim [18]25, wherein the oxidant is selected from the group consisting of nitrogen oxides, nitrosyl chloride, chlorine, bromine, iodine, fluorine, and ozone and hypochlorite.

25. (Currently amended) ~~The method of Claim 18,~~ A method of separating a precious metal from a source material, comprising the steps of:

a) combining a source material containing at least one precious metal with a solution comprising at least one ammonium salt, at least halogen salt and at least one gaseous oxidant, wherein the oxidant is provided to the solution by the introduction of at least a first liquid reagent and at least a second liquid reagent; and

b) separating at least a portion of the at least one precious metal from the solution.

26. (Original) The method of Claim 25, wherein the first liquid reagent is selected from the group consisting of hypochloric acid, sodium hypochlorite, potassium hypochlorite, ammonium hypochlorite, and mixtures and combinations thereof, and the second liquid reagent is selected from the group consisting of nitric acid, sodium nitrate, potassium nitrate, ammonium nitrate, and

mixtures and combinations thereof.

27. (Currently amended) The method of Claim [18]25, wherein the ~~reaction zone is~~ combining step is performed at approximately ambient pressure.

28. (Currently amended) The method of claim [18]25, further comprising heating the solution to a temperature less than approximately 150 degrees Celsius.

29. (Currently amended) The method of claim [18]25, further comprising heating the solution to a temperature in the range of approximately 50 degrees Celsius to approximately 100 degrees Celsius.

30. (Currently amended) The method of claim [18]25, wherein the pH of the solution is less than approximately 10.

31. (Currently amended) The method of claim [18]25, wherein the pH of the solution is approximately 0.5 to approximately 8.

32. (Currently amended) The method of claim [18]25, wherein the solution further comprises an acid.

33. (Currently amended) The method of claim [18]25, wherein the at least one precious metal is selected from the group consisting of platinum, iridium, osmium, palladium, rhodium, ruthenium, gold, and rhenium.

34. (Canceled).

35. (Currently amended) The method of Claim [34]42, wherein the at least one ammonium salt is provided to the solution by an ammonium-containing compound selected from the group consisting of ammonium sulfate, ammonium iodide, ammonium bromide, ammonium chloride, ammonium fluoride, ammonium acetate, ammonium carbonate, ammonium chromate, ammonium nitrate, ammonium oxalate, ammonium phosphate, and mixtures and combinations thereof.

36. (Currently amended) The method of Claim [34]42, wherein the concentration of the at least one ammonium salt is approximately 0.01 gram-mole per liter to approximately 2 gram-moles per liter of the solution.

37. (Currently amended) The method of Claim [34]42, wherein the at least one halogen salt is provided to the solution by a halogen containing compound selected from the group consisting of hydrogen chloride, hydrogen bromide, hydrogen iodide, hydrogen fluoride, sodium chloride, sodium bromide, sodium iodide, sodium fluoride, potassium chloride, potassium bromide, potassium iodide, potassium fluoride, ammonium chloride, ammonium bromide, ammonium iodide, ammonium fluoride, and mixtures and combinations thereof.

38. (Currently amended) The method of Claim [34]42, wherein the concentration of the at least one halogen salt is approximately 0.01 gram-moles per liter of solution to approximately 2 gram-moles per liter.

39. (Currently amended) The method of Claim [34]42, wherein the ammonium salt is provided to the solution by an ammonium containing compound selected from the group consisting of ammonium iodide, ammonium bromide, ammonium chloride, ammonium fluoride, ammonium acetate, ammonium carbonate, ammonium chromate, ammonium nitrate, ammonium oxalate, ammonium phosphate, and mixtures and combinations thereof, and the halogen salt is provided to the solution by a halogen containing compound selected from the group consisting of ammonium iodide, ammonium bromide, ammonium chloride, ammonium fluoride, and mixtures and combinations thereof.

40. (Canceled).

41. (Currently amended) The method of Claim [40]42, wherein the oxidant is selected from the group consisting of nitrogen oxides, nitrosyl chloride, chlorine, bromine, iodine, fluorine, ozone, and mixtures and combinations thereof.

42. (Currently amended) ~~The method of Claim 34,~~ A method of extracting a precious metal from a source material comprising the steps of:

a) charging to a reaction zone a solution comprising at least one ammonium salt,

at least one halogen salt, at least one acid, water, and a source material containing at least one precious metal;

b) heating the reaction zone to a temperature of approximately 50 degrees Celsius to approximately 100 degrees Celsius under oxidizing conditions to form a slurry, wherein the oxidizing conditions are provided by a gaseous oxidant that is provided to the solution by the introduction of at least a first liquid reagent and at least a second liquid reagent; and

c) separating the at least one precious metal from the slurry.

43. (Original) The method of claim 42, wherein the first liquid reagent is selected from the group consisting of hypochloric acid, sodium hypochlorite, potassium hypochlorite, ammonium hypochlorite, and mixtures and combinations thereof, and the second liquid reagent is selected from the group consisting of nitric acid, sodium nitrate, potassium nitrate, ammonium nitrate, and mixtures and combinations thereof.

44. (Currently amended) The method of Claim [34]42, wherein the reaction zone is at an approximately ambient pressure.

45. (Currently amended) The method of Claim [34]42, wherein the reaction zone is heated to a temperature of approximately 60 degrees Celsius to approximately 90 degrees Celsius ~~and the pressure is approximately ambient.~~

46. (Currently amended) The method of Claim [34]42, wherein the reaction zone is heated to a temperature of approximately 60 degrees Celsius to approximately 90 degrees Celsius and the pressure is approximately ambient, ~~and wherein the oxidizing conditions are provided by an oxidant other than gaseous oxygen.~~

47. (Currently amended) The method of Claim [34]42, wherein the pH of the solution is less than approximately 10.

48. (Currently amended) The method of Claim [34]42, wherein the pH of the solution is approximately 0.5 to approximately 8.

49. (Currently amended) The method of Claim [34]42, wherein the at least one acid is selected from the group consisting of sulfuric acid, nitric acid, hypochloric acid, phosphoric acid, and mixtures and combinations thereof.

50. (Currently amended) The method of Claim [34]42, wherein the at least one precious metal is selected from the group consisting of platinum, iridium, osmium, palladium, rhodium, ruthenium, gold, and rhenium.